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Augmented consciousness: Artificial gazes fifty years after Gene Youngblood's Expanded Cinema

Federico Biggio

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Abstract

The article aims to question the concept of 'expanded cinema' proposed by Youngblood in 1970, by taking into account three 'artificial gazes', corresponding to three exemplar technologies of the contemporary media scenario, commonly conceived as tools for the augmentation of both the visual perception and the cognition of the human being. Likewise, the experimental cinema, **the technologies of augmented reality, machine learning, and search engine algorithms bring out the consciousness of the individuals in order to personalise the user experience in a computational way.** Simultaneously, they are commonly intended as ludic and irrational experiences offered by the entertainment industry. The article's purpose is therefore to tackle the ambiguity among the exact knowledge assured and produced by these technologies and the subjectivity of the gaze set by them. By recovering Youngblood's inheritance, expanded cinema is not just a path to free the spectator's gaze from the fictional representation of the world produced by the entertainment industry, but also a new media condition in which the users are requested to interpret and communicate the real world in a truthful way.

Keywords: augmented reality, digital humanities, expanded cinema, film studies, filter bubble, Gene Youngblood, intelligence

Introduction. Recovering Youngblood's inheritance

Fifty years after Gene Youngblood's seminal book *Expanded Cinema*, many connections can be traced between it and the condition in which contemporary digital media users live. The Youngblood study is not only a compendium of the main forms of experimental cinema of the 1970s, but represents a critical reflection on the intermedial condition of the spectator (not only cinematographic), in an era in which artificial intelligence and the internet are just overlooking the media landscape, and visual artists are barely starting to discover the creative potential of these new tools. The capability of emerging visual technologies to create immersive environments is associated on one hand with a release from the control of the gaze (and experience) by the mass media, but also, on the other, to the more general idea of an *interconnected system* in which the contemporary individual is precisely immersed – an idea that clearly reflects the influence of cybernetics and the cognitive-enactivist paradigm developed in those years. This conception of the world as an 'interconnected operating system' – as Youngblood explains in the preface to the edition published on the occasion of the fiftieth anniversary – is today particularly fruitful to describe the hyperconnected real spaces that the subject experiences in an absolutely subjective way: 'reality technologies [VR, AR, MR, XR]' he writes 'are the new expanded cinema'.^[1]

In the past, other contributions have already recovered Youngblood's inheritance. The 2011 essays *Expanded Cinema: Art, Performance, Film* have gone over the path inaugurated by Youngblood and have dealt with the influence of video technologies on new media art, by describing a media scenario in which expanded cinema is a sort of genre situated in the context of the radical arts.^[2] Differently, the present article aims to overcome the field of film studies and to accept the suggestion proposed by Youngblood by conceiving the 'expansion' as a process regarding the technological enhancement of human consciousness. An interesting example in this direction is constituted by the book *Fluid Screens, Expanded Cinema*, edited by Janine Marchessault and Susan Lord.^[3] Here the focus shifted, from time to time, from the concept of synesthesia to that of the intermedial condition, coming to propose an understanding of the social dimension represented by so-called global publics. In this way, the authors have contributed to extend the theoretical range conveyed by the expression 'expanded cinema', by including a reflection on the

universe of ubiquitous computing as well. Here, I would like to go even further, by understanding the 'expansion' precisely as a cognitive augmentation process by means of artificial intelligence and computational technologies.

With this in mind, I will develop my considerations in three directions. First, I will recover the idea of 'intermedial condition' used by Youngblood to describe the 1970s media spectator.[4] Indeed, Youngblood describes this condition using pessimistic tones: what he calls the 'videosphere' is the result of the incessant modelling of the real world by the entertainment industry (television and cinema) in a fictional way.[5] Despite this, the radical critique of mass media culture is balanced by the optimism he places in the 'cosmic consciousness', a new ontological condition made possible by forms of experimental cinema (realised with holographic technologies, oscilloscopes, multiple projection environments, etc). Today, this idea can be retrieved to describe user enhancements by means of computational technologies, some of which aim to reduce social inequalities or to foster individual affirmation, in particular user creativity.

Later, I will reconsider Youngblood's concept of 'personal cinema' and 'synesthetic cinema'. [6] In my view, these phenomena point to a particular logic which underlies three exemplar technologies of our time: augmented reality, machine learning, and search engine algorithms. These ones are diachronically fixed at the end of an evolutionary process of the forms of spectatorship, which starts from the traditional cinema show and arrives at the so-called 'cinematographic relocation'. [7] From a formal standpoint as well, similarities among the forms of expression of experimental films described by Youngblood and the ones of certain occurrences of augmented reality are detectable.

Finally, from a socio-semiotic perspective, I will propose a re-reading of the concept of the 'artist ecologist', corresponding to the 'scientist of the form' and to the 'user and author aware'. [8] It is interesting to note that precisely the ecological issue, a very dominant one in contemporary public discourse, is the metaphor chosen by Youngblood to indicate the artist's political function in society. This idea, in my opinion, can be effectively regained to describe a series of contemporary artistic practices and scientific researches which use computational tools to expand the perception of the spectator about the data-driven world.

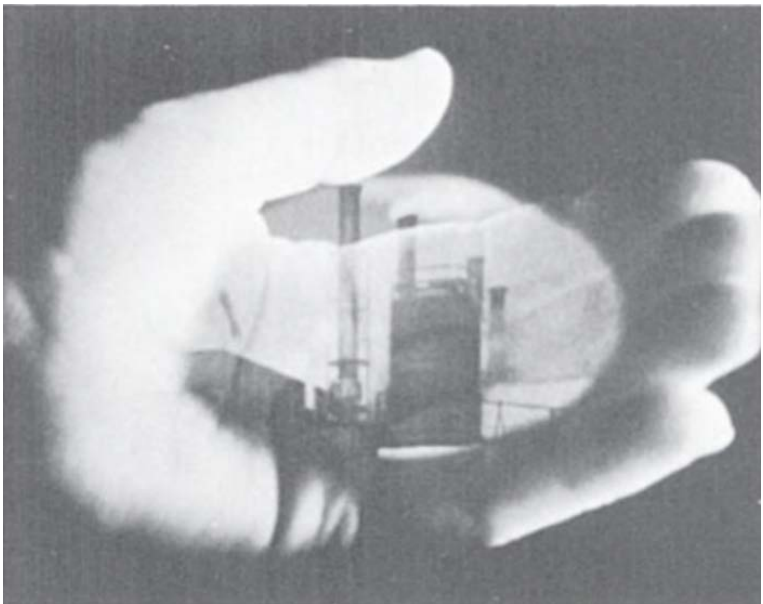


Fig. 1: A shot from X-film by John Schofill (1968).

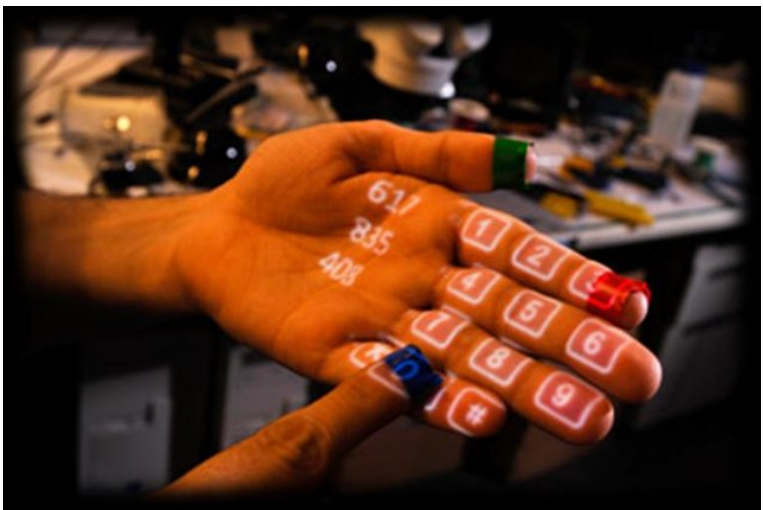


Fig. 2: Projection Based Augmented Reality.

Three gazes: Increased, distant, anesthetised

Youngblood's most frightening statement highlights a loss of consciousness by the audience, in which human senses have been aesthetically overexposed and the user's 'technological zeal has outstripped the psychic capacity to cope with the influx of information'.[9] According to Youngblood, the cinema and television, in the continuous production of moving images, have brought about this overexposure. The pivotal feature of these media is their capacity to establish a *gaze*, corresponding to a 'way of seeing' the world, and provides cultural models that affect the individual cognition.

Nowadays, this postmodern conception may appear surpassed. However, the renewed interest in artificial intelligence in all fields, the establishment of augmented reality media, and their market availability have led to reconsidering the issue of information over-exposition and, in the academic field, the connection between human sciences and cognitive neuroscience. For instance, the notions of 'augmented cognition' or 'extended mind' become commonplace and are rarely associated with discursive rhetorics which celebrate or condemn the informative and cognitive enhancement offered by digital technologies.[10]

The pivotal question I will try to answer is: what kind of gaze *over the world* do emerging media and artificial intelligence establish? Doubtless, an *augmented* one, but to what extent? It is not clear if these new technologies contribute to achieve a cognitive increase of human consciousness or annihilate this possibility because of their nature as cultural product, by immersing the user in an alternative and fictional world; or whether this enhancement enables a subjective form of knowledge, reducing the world to a personalised configuration for the user, or an objective one, established by a super-intelligence above the users, which otherwise would be unable to grasp this information.

In the first part of the article, I will deal with the *increased* gaze established by augmented reality technologies, by taking into account devices able to overlap virtual contents with the user's vision of the real world. Second, I will examine the *distant* gaze established by machine learning software used in speculative practices and quantitative searches typical of the digital humanities scientific field, but also in artistic and bottom-up ones; the pivotal point here will be the relation among the adoption of a *distant* point of view and the self-proclamation of its perspective as objective.[11] Finally, I will deal

with the *anesthetised* gaze produced by the *filter bubble* that search engine algorithms establish.[12] This one is an essential feature of the contemporary mode of knowing the world, since it establishes a subjective point of view corresponding to a set of patterns and clusters built upon subjective habits, preferences, and desires of the user.

Augmented Reality and the increased gaze: Representation after the algorithmic turn

In a 2011 article media theorist William Uricchio deals with algorithmic image processing, by taking into account two case studies: Photosynth by Microsoft and the technology of augmented reality. According to him, in the former case, the image's level of expression is composed by discrete units (for instance, single shots captured by different points of view), and is produced by the execution of a finite sequence of instructions by a rendering software. In this configuration, the user's visual access to the world is not the one arranged by the framing and playback operations typical of the cinema. The closed framing is replaced by the provision of a simulated environment, in which the user can move, and the photographic shot is replaced by the computational rendering, produced *ex novo* from time to time, where the point of view is determined by the choices made by the user. In Uricchio's argumentation, Photosynth is understood as a technique of image processing, rendering, and stitching, based on a disassembly of the real world that, in the resulting representation, is reassembled (this technique will be widely diffused in the years to come, above all in the design of contents for virtual reality). Augmented reality, instead, employs object recognition and world tracking software in order to visualise simultaneously and in real-time virtual contents and real-world perceptions.

From an experiential standpoint, Uricchio describes some features of augmented reality which, still today, constitute quintessential features of its *medium specificity*, by marking a difference in comparison with the Photosynth system:

Movement in Photosynth is limited to the virtual world, but opens up the possibility of seeing through many different points of view, through other authors' eyes. By contrast, movement in the augmented reality domain is sited within the physical world, embedded in a multisensory environmental mix of sounds, smells and presences, but point of view is ultimately limited to that of the viewing subject.[13]

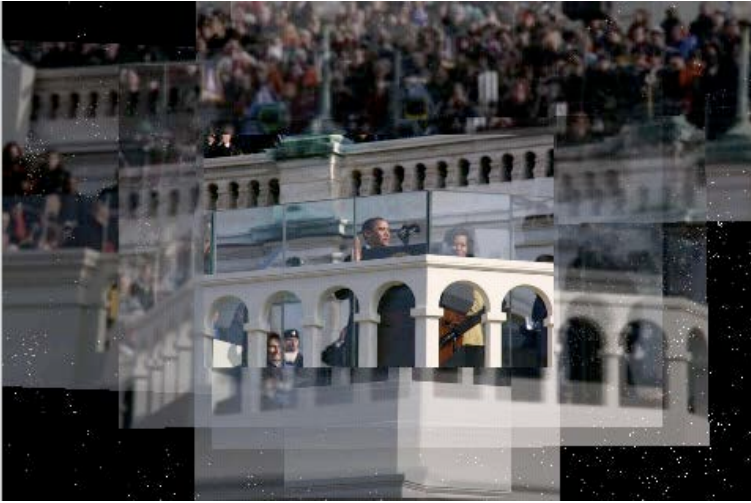


Fig. 3: The Interface of Photosynth, https://it.wikipedia.org/wiki/File:Photosynth_esempio2.jpg

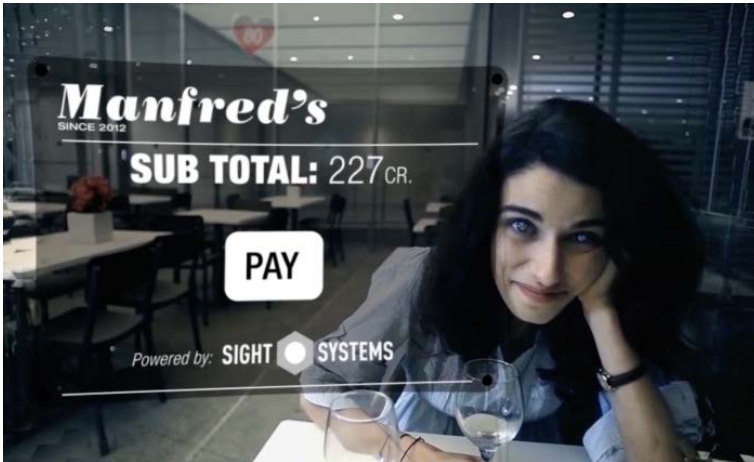


Fig. 4: A shot from the short film *Sight* (Man-Ray, Lazo 2012), featuring the AR increased gaze.

The pivotal point in augmented reality is thus the unyielding subjectivity of the increased gaze. Augmented reality devices establish a particularly user and viewing experience: it is dislocated (although often a space for media performance is prescribed) in a way which, several times, has been associated with Casetti's notion of relocation.[14] This process describes the progressive abandon of traditional movie theatres in favour of more personalised forms

of spectatorship. At the same time however, they configure a subjective and computationalistic view, similar to that described by Youngblood in *Expanded Cinema*: in this perspective, the act of seeing is associated with a coming out of the internal consciousness. For instance, some of the more sophisticated devices, like Hololens, are provided with eye-tracking software able to associate a mathematical vector to a movement of the eye in order to cause the immersion of contents. The device capacity of understanding and acting according to eye movement is exactly the result of an external translation of biological dynamics. However, the eye-tracking software can be intended on one hand as a tool for increasing human gaze possibilities, as several science-fiction movies envision: in this perspective, eye-tracking technologies are useful to analyse the beholder vision experience, as many film studies scholars do.[15]

Also, eye-tracking software can be intended as a cognitive deactivator: it operates by anticipating, selecting, and translating the aesthetic and cognitive prehension of the physical world, by provoking a sort of anaesthetisation of experience and reducing human agency to the movement of eyes.

In a similar way, the experimental film *The Moment*, based on a viewer attention recognition system, can be conceived as a product able to establish an increased gaze.[16] By a real-time analysis of brain activity, the software sends information to a computer that is able to rearrange the film, determining which scenes to show in what order. However, it is not just the intentional choices of the viewer to determine the expression of the text, as in Photosynth or in augmented reality, but the unconscious cognitive configurations detected in the brain, which the program is able to decipher through a series of deep operations at the level of the computer code.

We are still dealing with a subjective and personalised representation. However, in this view, it is clear that the coupling configuration among human being and machine is not necessarily related to a cognitive enhancement. This conclusion could not be acceptable since, when we deal with augmented reality (but also with cognitive cinema) from a mediological standpoint, we must consider specific applications and not just a theoretical operating, focusing on the forms determined by design choices situated in a historical and socio-cultural context. And at the current state of the art, augmented reality experiences that are socially relevant are predominantly referred to ludic and irrational forms of entertainment, rather than to a cognitive enhancement.

Machine learning and the distant gaze: Digital humanities and post-positivism

Uricchio's article has one further merit: that of dealing with augmented reality technology within the wider reflection about the agency of the algorithm (obviously the agency is not of the algorithm itself, but of the subject who designs, provides, and uses it, by expanding his/her consciousness). Here we deal with a second type of gaze, the distant one, which is set by machine learning algorithms and featuring the possibility of observing simultaneously a large number of entities. This gaze is representative of an augmented, interstitial, and multifocal form of intelligence. However, just like for the subjective gaze of augmented reality, also the distanced gaze is affected by cultural bias by virtue of its nature as a cultural artefact. In particular, I will first analyse the *distant* gaze of machine learning technology, taking into account two examples: the computer vision algorithms designed by Google and implemented in Vision's API, and those for image processing and data visualisation designed by the Cultural Analytics Lab created by Lev Manovich.[17]

These two cases share the same basic assumption, whereas they respond to different operational objectives. Their assumption is that a form of super-human intelligence, like the one of machine learning, may be associated to the human one. This form of intelligence is accomplished through the observation of as many occurrences as possible of an entity of the world itself. This process of massive observation, through which an artificial intelligence *learns* to know, is carried out algorithmically and is unreachable for the biologically wired human eye. At first, the machine observes the formal level of an occurrence and learns to recognise recurrent patterns, on the basis of the information received previously by a human intelligence.[18] After having repeated this operation on a large number of occurrences, it becomes able to automatically detect, from an *intertextual* point of view, the *transtextual* correlation between forms and meanings. *Intertextual* is here intended as *overtextual*, in order to describe the multifocality of the gaze, simultaneously directed toward a set of items (i.e. a *dataset*) and able to trace (and to learn) a formal continuity (a pattern) through the unities.

However, whereas this is the basic functioning of machine learning, the purposes of applications which implement it are very different. In Google Vision's API, machine learning potentialities are strictly associated to an augmentation of the user cognition by object recognition functions and real-time text translation; their main functionality is that of being implemented

as a web software into another application, like an augmented reality one. In the second case, referred to the field of digital humanities, the purpose is still to find and represent complex correlations between formal traits, but the aim is that of achieving an equal and non-reductionist representation of a cultural phenomenon (the technology like a super-scientist of culture):

By representing each image as a point in a space of many features, we can now compare them in quantitative ways. In such representation, the visual difference between images is equated with a distance in feature space.[19]

It is important to keep in mind this last conception in order to define the irreducible subjectivity also featured in the distant gaze.

The distant gaze of the artist ecologist

Let us take another step. The distant gaze of machine learning coincides with the one of the neural networks built in the computer vision software or of the algorithms that detect patterns in databases. They own a formalist and statistical knowledge. During the observation process, they do not look for the figural or cultural meaning of an image but rather they look to the formal level of it. Hence, the distant gaze of machine learning can be compared with the one of the artist as conceived by Youngblood. According to him, the artist is the 'scientist of the form', one who 'separates the image from its hidden meaning and reveals its hidden potentialities, its process, its actual reality, the experience of the object'. [20] Although this sentence seems to describe a return to the immanence of the object, in truth what he focuses on is the immanence of the form; the artist replaces the narrative plot with the texture of the plastic elements that constitute the formal expression of the image (for this reason the essence of expanded cinema for Youngblood lies in provoking the synaesthesia of the beholder).[21]

Returning to the distant gaze, it is not neural networks that are conceived as entities provided of a certain artistry. Rather, it is the artist who adopts computational technologies in order to realise the artwork, by retuning to research on the immanence of the form. In this perspective, speculative research via computational methods and artistic practices like data art would meet each other. Youngblood had already sensed this possibility in developing the figure of the *artist ecologist*:

the act of creation for the new artist is not so much the invention of new objects as the revelation of previously unrecognized relationships between existing phenomena, both physical and metaphysical; [...] ecology is art in the most fundamental and pragmatic sense, expanding our apprehension of reality [...] the artist does not point out new facts so much as he creates a new language of conceptual design information with which we arrive at a new and more complete understanding of old facts, thus expanding our control over the interior and exterior environments.[22]

The connection between the distant gaze and the figure of the artist ecologist is therefore the possibility of increasing human cognition, and in particular visual faculties, with machine learning intelligence, in order to achieve a more compelling understanding of the already known reality. From a rational and empirical standpoint, that of digital humanities, the understanding of the distant gaze can be associated to the objectivity and reliability of a certain representation. Being an 'ecologist', in this sense, means *cleaning up the informative overload*, in order to observe – better, objectively, and in an abstract way – the elements that matter. This is the utopian project at the base of expanded cinema:

The art and technology of expanded cinema will provide a framework within which contemporary man, who does not trust his own senses, may learn to study his values empirically and thus arrive at a better understanding of himself.[23]

From an artistic point of view, in a similar way, it is always about the better understanding of what is already known. During the 'Neurons' exhibit, held in 2020 in Paris at Centre Pompidou, the augmentation of the consciousness featured in the artworks – or its expansion, as we are calling it here – is accomplished in the harmonious and artistic representation of 'old facts', the database of information.[24] The artwork by Refik Anadol, *Engram: Data Sculpture*, for example, is a projected video in which fluid and irregular forms equipped with a preponderant plasticity move. These forms correspond to the mathematical translation of the cerebral wave movement of participants observed during an experiment on neurological diseases. Here the distant gaze of the data artist is comparable to the one of an augmented mind, in the sense of a mind hyper-connected with other ones – and it is moreover the same gaze occupied by the beholder in front of the artwork.



Fig. 5: Refik Anadol, 2018, Engram: Data Sculpture.

However, like the increased gaze, these forms of data-visualisation are not able to bypass human subjectivity and its inevitable imperfection. This is true for the former in the field of digital humanities as well as for the latter in the field of data art. The former would run into the question of pattern discrimination – that is, the presence of cultural bias at the level of the parameters that the algorithm uses to cluster the reality.[25] As for data-visualisation, the design choices would determine the forms of the representation and, especially in the field of data-art, meaning-making processes would be activated by the interpretation of the data. As evidenced by the semiotic sensitivity of Johanna Drucker, ‘information visualizations are acts of interpretation masquerading as presentation’.[26] So, once again, we are looking at a subjectivised experience process – and in particular of the artist and data scientist – which establishes the distant gaze.

Disproving machine learning

As machine learning is adopted for very different purposes, from empirical studies to digital creativity, it is clear that the typology of cognitive augmentation related to the distant gaze changes from time to time. An interesting example is the style transfer algorithm, able to implement a Van Gogh-like style to an image by the user, a technique based on the observation of the

artist's repertoire and on the formal knowledge of his style.[27] These practices, as well as those beforehand analysed, presuppose not only an intertextual 'way of seeing' the world, but also a 'will of telling' it, adopting a necessarily subjective choice of rhetoric and language. The creative uses of machine learning connote specific practices that are culturally determined and can be referred to the productive system of media which provides in turn the means to expand users' consciousnesses. What happens, for instance, when such practices as data visualisation conform and become mixed with those of multimedia content production?

It is possible to refer data visualisation products to strategies of audience engagement carried out by institutions and cultural organisations. Nonetheless, connections can also be traced with user generated contents, where uses of machine learning to create playful (such as deep fake or face swap), spectacular (such as deep dream), or artistic (such as those created through style transfer algorithms) contents respond to a logic of democratisation of digital creativity through liberalisation of access to computational tools.[28]

In conclusion, what unites the several different cases of distanced vision is precisely the fact that the design of the gaze never represents the final stage of the augmentation process, and the knowledge is acquired each time by the user, who choses in a subjective way what and how to observe. Whether by a data scientist, a generalist user, or a prosumer, the adoption of the distant gaze leads to the assumption of an *intertextual competence*, assumed through the distant view (made algorithmically) and the establishment of a connection with an intelligence located online. The distant gaze constitutes, therefore, a second 'way of seeing', whose specificity does not lie just in the pragmatic of the vision, nor in a mere showing of a truthful representation of the world, as digital humanities state, but, on the contrary, in the enunciative *praxis* by which the gaze (and hence, the technology) is designed, provided, and used by the social community in order to produce a visual text. At first there is a selection by the artist ecologist (or by the prosumer, by the data scientist) of a portion of the world (a dataset, or an application), from an intertextual position; later, its re-formalisation as objective, playful, or artistic, and its communication in the information network, in the form of an empirical representation, a show, or a game.

Search engine algorithms and the anesthetised gaze: Rethinking the filter bubble

Nowadays, we know that the circulation of online media content must be considered in light of a complex deep system of information that determines the order of content's appearance, a system that we could define, recovering Youngblood's critique of the industry of entertainment: the web *palimpsest*. This system is typical of web platforms like social media or search engine feeds; it is based on algorithmic computations of data concerning online activity of the user. It constantly produces digital simulacra of the world and directly influences perception of it. We might say that it is the production of an ekphrastic mathematical representation of the existence of individuals who, by acting in the digital space, expand him/herself, and *produces* data. The underlying idea is that of being located within an ecosystem that is not only intermedial, as described by Youngblood, but informational. In this scenario, the mediation role played by information filtering tools, better known as *filter bubbles*, is increasingly relevant and necessary; their function is to organise the flows of contents starting from a statistical and predictive calculation of the user's online activity data.[29]

The third and last gaze type, therefore, does not correspond neither to a digitalised optical function nor to a computational task provided for being intentionally used by the user. Rather it corresponds, just like the others, to an algorithmic representation of the personalised world and, ever like the previous ones, it is modelled on the user identity and sets unavoidable filters, restrictions, cultural biases, preferred paths, intentional choices. In order to better understand this passage, let us return again to the augmented reality and to the 'risk' which the philosopher Pietro Montani highlighted in his essay *Tecnologie della sensibilità*. [30] According to him, augmented reality establishes, like any other technology, an associated environment in which reality is overwritten by its meta description, so that the individual is going to perceive the world just in a single perspective, that of personalised representation. Montani explained this condition proposing the idea of *anaesthetisation* of the senses.

By adopting this perspective, we could conceive the *filter bubble* as a cognitive anaesthetic, to the extent that it returns to the user world representations that meet his/her preferences. It works by establishing an appearance, and hence, by hiding a secret: the user believes that what he sees is all there is to see (precisely the contrary of the informatics claim 'what you see is what

you get'). Moreover, since they produce a simulacrum of the user, using this gaze we observe our own computational representation as well (for this reason they are called also 'echo-chamber'). At stake is the constitution of a space made of data and information, intangible but existing, to which only the users have access (or at least so it should be). In this perspective not only does the world become a *datum* (also in the sense of a *given*) to the user, in order to increase the cosmic consciousness of the individual, but at the same time the individual becomes a *datum*, in order to feed the algorithm that makes augmentation possible.[31]

In recent years, awareness of these deep processes has begun to grow. Today we know that, willingly or unwittingly, every action taken on the web is matched by a deeper action that can have certain consequences. Does the credit go to the great speeches based on the rhetoric of the revelation of something that had been hidden, by means of persuasive tones no less sensationalistic than those of Youngblood? We can guess. A good example is the work of Pariser – whose meaningful subtitle is 'What the Internet is *hiding* from you' – which explicitly refers to the revelation of hidden truths and, moreover, is configured as discourses of discovery that aim, metaphorically, to 'awaken' the anesthetised gaze of the user.

Conclusions

At the end of this *excursus* dedicated to describe three exemplar technologies of the contemporary media scenario, it is possible to detect an ambiguity that the concept of expanded consciousness, as well as that of augmentation, entails; an ambiguity that emerges whenever we consider, on the one hand, from the perspective of the exact sciences, expansion as a form of cognitive enhancement offered by computational technologies; and, on the other hand, from the perspective of the human sciences, and in particular those of communication, the universe of meanings that derives from their actual adoption by a cultural community. In fact, although the expanded consciousness corresponds to an increase in human intelligence, it nevertheless denotes cultural processes as the design of ever-new devices and software or the emergence of cultural products to which these devices give life, in a perspective not different from that which Youngblood associates with the entertainment industry. For instance, it is very difficult, if not impossible, to precisely mark the point where an augmented reality application ceases to function as

a cognitive enhancer and becomes a cultural product for the irrational entertainment produced by the media industry; or, in the case of API like those of Google Vision, the threshold between the product of a multinational and the operating component of an application created by a user. A critical-interpretative analysis of digital cultural products might give interesting answers in this regard. However, since these emerging media are intrinsically related to technologies developed in the computer science field (so much so that today the most important departments of the main media players are those dedicated to data processing and innovative technologies research), the above analysis cannot withdraw from detecting the meanings associated to the technical and computational level, where cognitive enhancing functions operate establishing an artificial gaze.

Understanding expanded consciousness as a cognitive enhancement means also to study the quality of the adhesion to the reality of its artificial representation. The path we have taken here has proved that, as Youngblood suggested, the correlation between expanded consciousness and knowledge objectivity is not obvious. Nor is that which, on the contrary, he clearly posited among the concept of expanded consciousness and the liberation of the individual from the alienating entertainment industry. According to the above statements, the cognitive enhancement and the entertainment industry are not severable. As Simonetta Fadda writes in the afterword to the Italian edition of *Expanded Cinema*, ‘in the expansion of our consciousness we no longer feel free, as Youngblood imagined in 1970, but otherwise even more controlled and “played” from the outside’.[32]

Thus, what is the point in which the consciousness expansion may become a pretext for ‘playing the user from the outside’? Nowadays the most frightening risk related to the use of digital media is not that of the physical hybridisation with digital prostheses (which is instead associated to positive meanings), rather the use of personal data for improper purposes. We can immediately think of a government using cyber tools to drive public opinion; but this is a limited view, since the totality of digital users are commonly media producers and using computational technologies for their own purposes. The expanded consciousness must be therefore considered as a recurrent technological configuration of contemporary media experience and not just a mere socio-political weapon.

If instead, adopting the opposite perspective, we accept the correlation among expanded consciousness and knowledge objectivity, we accept as

truthful and therefore reliable the practices of digital humanities and the representations of the world performed by the use of computational technologies. However, not less than the ideological forms of mass entertainment, these practices may be exposed to an ethical judgment. For this reason, entrusting human cognitive faculties to machines presupposes and requires a process of collective calibration, of intersubjective levelling, of unification of differences (despite pattern discrimination), which makes the ethical choices particularly relevant. In the ideology of digital humanities, and in the typology of gaze it refers, artificial intelligences are intended as a guarantor of equality, plausibility, diversity, and freedom of expression. However, it is clear that is exactly by virtue of a choice, and thus of an ethical position, that the informative overload is reduced, and a readable representation of the world is provided in turn. And, obviously, these representations may correspond to economic, political, or artistic purposes.

In conclusion, the ethical responsibility is not only that of data scientists or data artists, but also that of prosumers (no longer the creators of fandom, but every company that uses digital media to communicate itself), and finally of all users of the information network. They are increasingly called to be critical interpreters of the world represented in their own screen, as well as of their own existence, in order to be able to represent it to others in a good way, becoming information producers.

The key word is interpret. In a very real sense we can now show both our experiences and our emotions to one another, rather than attempting to explain them in verbally abstracted language [...] We can now see through each other's eyes, moving toward expanded vision and inevitably expanded consciousness.[33]

Youngblood was not wrong in declaring that, in expanded cinema, all are artists, all are content producers and, therefore, all are responsible for representing a 'way of seeing' the world for someone else.

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dia, in particular those related to augmented and virtual reality media. Moreover, he is interested in the digital humanities and in the analysis of computational techniques in the cultural and academic field. In 2016 he graduated in communication and media culture with a thesis on augmented reality and wearable technologies, and he obtained an annual research grant at the Interdepartmental Department of Territory Sciences at the Polytechnic of Turin. Among his publications are: *The paradigm of augmentation. Immediate interactivity and cooperative design* (2016), *Digital arts and humanities for cultural heritage* (2018), *From mass media to transmedia. The digital challenge in journalistic editorial offices* (2018), *Guidebook for mirror worlds. Poetics of transparency in augmented reality* (2020).

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Notes

- [1] Youngblood 2020, p. xxi.
- [2] Rees & White & Ball & Curtis 2011.
- [3] Marchessault & Lord 2008.
- [4] Youngblood 1970, p. 41.
- [5] Ibid., p. 78.
- [6] Ibid., p. 82.
- [7] Casetti 2015, pp. 17-42.
- [8] Youngblood 1970, p. 346.
- [9] Ibid., p. 58.
- [10] The two notions respectively refer to Engelbart's idea of *augmenting human intellect* and to Clark's theory of the *extended mind*.
- [11] The term 'distant' is taken from the macro-analytic work of Franco Moretti (2005) that applies computational methods to literary data.
- [12] Parisier 2011.
- [13] Uricchio 2011, p. 33.
- [14] Dusi 2014; Casetti 2015; Arcagni 2016.
- [15] For a broader and syncretic understanding of this research trend referring to Shimamura (2013).
- [16] Ramchurn (Nottingham 2018) <http://braincontrolledmovie.co.uk> (accessed on 31 January 2020).
- [17] <https://cloud.google.com/vision> (accessed on 31 January 2020); Manovich 2015.
- [18] This method is known as 'supervised learning'.
- [19] Manovich 2015b, p. 26.
- [20] Youngblood 1970, p. 71.
- [21] Ibid., p. 75.
- [22] Ibid., p. 346.
- [23] Ibid., p. 116.
- [24] The exhibit *Neurones, les intelligences simulées* was held in Centre Pompidou, Paris, in 2020. It was curated by Frederic Migayrou and included the works of Burnam, Vanderbeek, Haus Rucker-Co, etc.
- [25] Apprich & Chun & Cramer & Steyerl 2018.
- [26] Drucker 2015, p. 10.

- [27] Gatys & Ecker & Bethge 2016.
- [28] Lughì & Russo Suppini 2015.
- [29] Pariser 2011.
- [30] Montani 2014.
- [31] Not surprisingly, the second chapter of Pariser's book is titled 'The user is the content'.
- [32] Fadda 2013, p. 343.
- [33] Youngblood 1970, p. 130.